



Cumulative Index 2002

Volume 20

March	NEW CONCEPTS AND TECHNIQUES IN PEDIATRIC ANESTHESIA, pages 1–246
June	NEUROSURGICAL ANESTHESIA, pages 247–484
September	ANESTHESIA-RELATED COMPLICATIONS, pages 485–732
November	HEPATIC MANIFESTATIONS OF SYSTEMIC DISEASES, pages 733–1001

Note: Page numbers of articles are in **boldface** type.

A

Abciximab, for interventional neuroradiology, 351

Abscess, brain, neuroendoscopic treatment of, 366–367

epidural, neuraxial blockade and, 671

retropharyngeal, airway management in, 780

Acetaminophen, as adjunct to office-based anesthesia for children, 206

for postoperative pain management in children, 128

Acetazolamide, for traumatic brain injury, 429–430

Achondroplasia, airway management in, 768

Acromegaly, airway management in, 768, 774

Active compression–decompression cardiopulmonary resuscitation, in treatment of anesthesia-related cardiac arrest in children, 10–11

Adenosine, for hypotension induction, in interventional neuroradiology, 352

in cerebral blood flow regulation, 254, 258

Aintree Airway Exchange Catheter, 917

Air embolism, central access and, 576

in pediatric neurosurgery, 393, 399

in stereotactic procedures, 371

neuraxial blockade and, 674

Airway, evaluation of, in interventional neuroradiology, 348

in rheumatoid arthritis, 406–407

Airway Exchange Catheter, 916

Airway management, anatomy of, **733–745**, 813, 833–834

pediatric, 747–749

variations in, 834

with Esophageal-Tracheal Combitube, 894–895

with ProSeal laryngeal mask airway, 873–875

approaches to, **813–832**

in difficult situations. *See Difficult airway management*

complications of, **503–512**, 814, 955–971

anatomic considerations in, 956

in endotracheal intubation, 503–507

in laryngeal mask airway, 507–509

laryngotracheal, 959–969

nasal, 956–958

oral, 958–959

pharyngeal, 958–959

types of, 956

with cricothyrotomy, 828–829

with Esophageal-Tracheal Combitube, 903–904, 969

with jet ventilation, 969

with laryngeal mask, 507–509, 887–889, 968

with nasal airway, 852, 854

with ProSeal laryngeal mask airway, 887–889

cricothyrotomy in, 828–829
diseases and, 767–787
equipment for, 821
 fiberoptic bronchoscopy, 938–941,
 951–952
 for pediatric patients, 752–755
 laryngoscopes, 753, 918–931,
 948–950

Esophageal-Tracheal Combitube for,
 893–907, 929
evaluation for, 814–819
 in obstructive sleep apnea, 801–802
facemasks for. *See Facemasks.*
fiberoptic. *See Fiberoptic airway management.*
in interventional neuroradiology, 352
in obstructive sleep apnea. *See Obstructive sleep apnea.*
in pediatric neurosurgery, 391
in pediatric patients. *See Pediatric patients, airway management in.*
in treatment of anesthesia-related cardiac arrest in children, 8
laryngeal mask airways for. *See Laryngeal mask airways.*
nasal airways for, 754, 775, 850–854
oral airways for, 755, 854–861
physiology of, 733–745
 ProSeal laryngeal mask and,
 875–877
skills for, 814
special devices and techniques for,
 909–934
 endotracheal tube guides, 914–918
 fiberoptic laryngoscopes, 923–931
 lighted styles, 909–914
 rigid laryngoscopes, 918–923

Airway trauma, anesthesia and, Closed Claims Project data on, 487–488

Albumin, cerebral effects of, 334
 for traumatic brain injury, 426

Alcohol, for sclerotherapy, in venous angioma, 356

Allergic reactions, to peripheral blockade, 701–702

Allergy, latex, in pediatric patients, 401

α_2 adrenoceptor, for analgesia in pediatric patients, 67–68

α_2 agonists, for analgesia in pediatric patients, 67–73

α -amino-3-hydroxy-5-methyl-isoxazole receptors, anesthetic agent interactions with, 267–268

American Society of Anesthesiologists, difficult airway management guidelines of, 814–815, 821–824, 829–830

Amiodarone, as antiarrhythmic agent in anesthesia-related cardiac arrest in children, 15, 17

AMPA (α -amino-3-hydroxy-5-methyl-isoxazole) receptors, anesthetic agent interactions with, 267–268

Analgesia, novel concepts for, in pediatric surgical patients, 59–82
 α_2 agonists, α_2 adrenoceptor, 67–68
 clonidine, 68–72
 dexmedetomidine, 72–73
 cyclo-oxygenase-2 inhibitors, background, 59–60
 physiology, 60–64
 selective, 64–67
 opioids, fentanyl, 75–76
 morphine, 73–75
 remifentanil, 76–77

sedation and, in pediatric patients for procedures outside the operating room. *See Sedation, and analgesia in pediatric patients for procedures outside the operating room.*

Anaphylaxis, airway management in, 774–775
 as side-effect of neuromuscular blockers in pediatric anesthesia, 53

Anatomic facemask, 843

Andersen's syndrome, airway management in, 768

Anesthesia, awareness during, 555–570
 incidence and etiology of, 555–558
 medicolegal consequences of,
 561–564
 future trends in, 564
 in Europe, 565–566
 in United States, 561–563
 prevention of, 563–568
 Bispectral Index Scale in,
 567–568
 psychological sequelae of,
 558–561
 inhaled, delivery systems for. *See Inhaled anesthesia delivery systems.*

Anesthetic depth, monitoring in children, 148–149

Aneurysms, intracranial, 377–384. *See also Subarachnoid hemorrhage.*
 anesthetic management of, 381–384
 clinical features of, 378

complications of, 379–381
diagnosis of, 378
epidemiology of, 377–378
interventional neuroradiology for, 354–355
postoperative management of, 384
rupture of, risk factors for, 377
unruptured, 377

Angioma, venous, sclerotherapy for, 356

Angioneurotic edema, hereditary, airway management in, 769

Angioplasty, for atherosclerosis, 356–357
for vasospasm, in subarachnoid hemorrhage, 356, 380, 447

Ankle block, in children, 107–108

Anticholinesterase drugs, and postoperative nausea and vomiting, 714–715

Anticoagulants, for interventional neuroradiology, 350–351

Antiemetics, for postoperative nausea and vomiting, 715–719

Antiplatelet agents, for interventional neurology, 351

Anxiety, preoperative. *See also Psychological preparation of parent and pediatric surgical patient.*
in children, outcomes related to, 40–42
risk factors for, 30–31

Apert's syndrome, airway management in, 768

Apnea, sleep. *See also Obstructive sleep apnea.*
and perioperative respiratory complications, 522

Apnea-hypopnea index, 799

Arndt Airway Exchange Catheter Set, 917

Arousal, from sleep, in obstructive sleep apnea, 795–796

Arrhythmias, in subarachnoid hemorrhage, 381, 448
management of, in anesthesia-related cardiac arrest in children, 15–18
pulmonary artery catheterization and, 578

Arterial catheterization. *See Invasive monitoring.*

Arterial injuries, central access and, 573–575

Arteriovenous malformations, brain, 384–386

anesthetic considerations in, 385–386
epidemiology of, 385
interventional neuroradiology for, 353–354

dural, interventional neuroradiology for, 354

spinal, interventional neuroradiology for, 355

Arteritic anterior ischemic optic neuropathy, in postoperative blindness, 614

Arthritis, rheumatoid, airway management in, 759, 773–774
spinal surgery for, 405–408

Arthrogryposis multiplex, airway management in, 768

Arytenoid cartilage, anatomy of, 743
dislocation of, in airway management, 960

Aspiration, in traumatic brain injury, 422–423
of foreign bodies, removal after, 764–765
of gastric contents
with facemask, 849–850
with ProSeal laryngeal mask airway, 888
of nasal airway device, 854
of oral airway device, 859

Aspirin, for brain protection, 324

Atherosclerosis, angioplasty for, 356–357

Atlanto-axial instability, in trisomy 21, airway management in, 758

Atlanto-axial subluxation, in rheumatoid arthritis, 407

Atlanto-occipital extension limitation, fiberoptic bronchoscopy in, 941

Atracurium, cerebral physiologic effects of, 284–285
for intubation, in traumatic brain injury, 422

Atropine, for bradycardia, in carotid artery angioplasty, 357

Autonomic nervous system, in cerebral blood flow regulation, 254

Autonomy in medical decision-making, examining, 228–230

Autoregulation, of cerebral blood flow. *See Cerebral blood flow, regulation of.*

Awake intubation, 821–825, 828–829
with fiberoptic endoscope, 944–951

B

Back pain, neuraxial blockade and, 472–673

Bainton pharyngolaryngoscope, 923

Balloon angioplasty, for atherosclerosis, 356–357
for vasospasm, in subarachnoid hemorrhage, 356, 447

Balloon-tipped bronchial blockers, in single lung ventilation in infants and children, 166–167

Barbiturates, cerebral physiologic effects of, 282
for brain protection, 286, 315–317
for increased intracranial pressure, in traumatic brain injury, 453
mechanism of action of, 268

Basilar artery, anatomy of, 247–248

Basilar venous plexus, anatomy of, 250

Beard, mask use with, 834, 843

Beckwith-Wiedemann syndrome, airway management in, 768

Behcet's syndrome, airway management in, 768

Belscope angulated laryngoscope, 922

Benzodiazepines, cerebral physiologic effects of, 283
for brain protection, 318

Berman airway, 855

Bicarbonate, in cerebral blood flow regulation, 254–256

Binasal airway, 852

Biopsy, brain, endoscopic, 366
muscle, for malignant hyperthermia, 636–637

Bispectral Index Scale, in anesthesia monitoring, 567–568

Bleeding, from nasal airway, 854

Blindness, after spinal surgery, 412–414
postoperative. *See*
Postoperative blindness.

Blood, viscosity of, reduction of, in traumatic brain injury, 432
versus cerebral blood flow, 256–257

Blood flow, cerebral. *See* *Cerebral blood flow.*

Blood pressure. *See also*
Hypertension; Hypotension.
control of, in aneurysm repair, 382
in brain protection, 321
in interventional neuroradiology, 351–352
in traumatic brain injury, 423–426
in cerebral blood flow regulation, 257–258

Blood volume, cerebral, in traumatic brain injury, 430–431, 433
intubation effects on, 420

Blood–brain barrier, colloid penetration of, 334
fluid movement through, 330–332

Body mass index, excessive. *See* *Obesity; Obstructive sleep apnea, in obesity.*

Body piercing, mask use with, 835

Bone grafts, for lumbar spinal fusion, 410–412

BONFILS Retromolar Intubation Fiberscope, 914

Brachial artery catheterization, monitoring of, 584

Brachial plexus block, in children, 104–105

Bradycardia, management of, in anesthesia-related cardiac arrest in children, 17–18
neuraxial blockade and, 683–684

Brain, abscess of, neuroendoscopic treatment of, 366–367
anesthetic agent effects on, 265–291
brain protection and, 286–287
inhalation agents, 265–266, 277–280
intracranial pressure and, 285–286
intravenous, 281–285
lipophilicity and, 265–266
molecular action, 266–272
neurophysiologic monitoring and, 287–288
nitrous oxide, 280–281
physiologic, 273–277
selection based on, 285–288
site of action, 265–266, 272–273
aneurysms of. *See*
Aneurysms, intracranial.

arteriovenous malformations of, 384–386
in pediatric patients, 400
interventional neuroradiology for, 353–354

biopsy of, endoscopic, 366

cysts of, neuroendoscopic treatment of, 366–367

edema of, in traumatic injury, 430
treatment of, 335–337

hematoma of, in shaken baby syndrome, 401
neuroendoscopic evacuation of, 366–367

oxygenation monitoring of. *See Oxygenation monitoring, cerebral.*

procedures on. *See specific disorders and procedures.*

protection of, 315–327
anesthetic selection for, 286–287
barbiturates for, 315–317
benzodiazepines for, 318
blood pressure control for, 321
etomidate for, 317
future of, 321–324
glucose management for, 321
in aneurysm repair, 384
in traumatic injury, 433–434
inhalation anesthetics for, 319–320
ketamine for, 318–319
nitrous oxide for, 319
opioids for, 318
propofol for, 317–318
temperature control for, 320–321
thiopental for, 384

subarachnoid hemorrhage in. *See Subarachnoid hemorrhage.*

traumatic injury of. *See Traumatic brain injury.*

tumors of, pediatric, 399

water content of, manipulation of, in traumatic injury, 430

Brainstem, anesthetic agent effects on, 272

Bronchogenic carcinoma, airway management in, 776

Bronchogenic cysts, airway management in, 776

Bronchoscopy, fiberoptic, anesthesia for, 944–948
approach to, nasal versus oral, 943
clinical aspects of, 943–944
contraindications for, 942
equipment for, 938–941, 951–952
failure of, 950–951
for difficult airway management, 826–828
for pediatric patients, 757
indications for, 941–942
mechanical skills for, 935–936, 938
patient preparation for, 944
teaching methods for, 935–938
techniques for, 935–938, 948–950
visual skills for, 938

for foreign body removal, 764–765
in mediastinal masses, 777

Bronchospasm, from rapacuronium administration in pediatric patients, 53

Brown-Robert-Wells frame, for stereotactic surgery, 370

Bullard laryngoscope, 924–925

Bupivacaine, for local anesthesia in children, 85

C

Calcium, in treatment of anesthesia-related cardiac arrest in children, 14

Calcium antagonists, for vasospasm, in subarachnoid hemorrhage, 446

Calcium channels, anesthetic agent interactions with, 269, 271

Cancer, airway management in, lung, 776
oral, 775

Capnography, in obstructive sleep apnea, 798–800

Capnometry, in postanesthesia care unit, 515–516

Carbon dioxide, measurement of, in obstructive sleep apnea, 798–800

Carbon dioxide tension, in cerebral blood flow regulation, 254–256
in traumatic brain injury, 429, 431

Cardiac arrest, anesthesia and. *Closed Claims Project* data on, 496
in children, anesthesia-related, 1–28
causes, 4–5
incidence, 1–4
reducing risk of, adherence to monitoring standards, 21–22
defining scope of practice, 21
identifying high risk factors, 19–21
programs of quality improvement, 22–23
providing appropriate perioperative environment for children, 21

treatment, 5–7
airway management, 8
anesthetic agents, 7
intravascular fluids, 12–13
management of arrhythmias, 15–18
preserving neurologic function, 18
resuscitation medications, 13–15

stopping resuscitative efforts, 19

techniques of chest massage, 9–11

vascular access, 11–12

Cardiac arrhythmias, in obstructive sleep apnea, 796–797

in subarachnoid hemorrhage, 381, 448

Cardiac complications, of myotonic muscular dystrophy, 648

of neuraxial blockade, 683–684

Cardiac injuries, central access and, 575–576

Cardiopulmonary bypass, cerebral metabolic rate of oxygen consumption in, 295

Cardiopulmonary resuscitation, Esophageal–Tracheal Combitube for, 899–900

techniques, in treatment of anesthesia-related cardiac arrest in children, 10–11

Cardiovascular complications, of anesthesia, Closed Claims Project data on, 495

Cardiovascular system, disorders of, in rheumatoid arthritis, 406

ProSeal laryngeal mask effects on, 875

Carotid artery(ies), anatomy of, 247

cavernous fistula with, interventional neuroradiology for, 354

endarterectomy of, anesthetic selection for, 287

cerebral oxygenation monitoring in, 303–304

occlusion of, interventional neuroradiology for, 355

stenting of, in atherosclerosis, 356–357

Carpenter syndrome, airway management in, 758–759, 768

Catecholamine excess, versus hyperthermia, 631–632

Catheter embolism, central access and, 576

Cavernous sinuses, anatomy of, 250

carotid artery fistula with, 354

CBF. *See Cerebral blood flow.*

Celecoxib, as selective cyclo-oxygenase-2 inhibitor, 64–65

Central access. *See Invasive monitoring.*

Central nervous system, developmental differences in function of, 137–138

Central neuraxial blocks, for pediatric regional anesthesia, 85–87

Cerebellar arteries, anatomy of, 248

Cerebral arteries, anatomy of, 247

Cerebral blood flow, 247–264

anatomic considerations in, 247–250

anesthetic agent effects on, 273–277

barbiturate effects on, 282

benzodiazepine effects on, 283

control of, in traumatic brain injury, 427–434

etomidate effects on, 282–283

global, measurement of, 251

in pediatric patients, 389

in traumatic brain injury, 430–431, 433

inhalation anesthetic effects on, 278–280

intubation effects on, 420

ketamine effects on, 284

local, measurement of, 251

local anesthetic effects on, 284

measurement of, 251–252, 260–261

muscle relaxant effects on, 284

nitrous oxide effects on, 280–281, 285–286

normal, 250–251

opioid effects on, 281–282

propofol effects on, 283

regional, measurement of, 251

regulation of, 252–261

abnormal, 259–260

blood pressure in, 257–259

carbon dioxide vasoreactivity in, 254–256

flow–metabolism coupling in, 253–254

hypoxemia-induced vasodilation in, 256

limits of, 260

testing of, 260–261

viscosity in, 256–257

Cerebral metabolic rate of oxygen consumption, anesthetic agent effects on, 273–277

barbiturate effects on, 282

estimation of, 295

etomidate effects on, 282–283

inhalation anesthetic effects on, 278–280

local anesthetic effects on, 284

normal, 250–251

opioid effects on, 281–282

propofol effects on, 283

versus blood flow, 253–254

Cerebral oximetry, for monitoring cerebral oxygenation in pediatric neuroanesthesia, 141

Cerebral oxygenation monitoring. *See Oxygenation monitoring, cerebral.*

Cerebral perfusion pressure, control of, in traumatic brain injury, 427–434

critical values for, for oxygen tension maintenance, 306–308
in cerebral blood flow regulation, 257–258

Cerebral protection. *See Brain, protection of.*

Cerebral salt-wasting syndrome, fluid management in, 342

Cerebral vascular resistance, regulation of, 427–428

Cerebral veins, anatomy of, 248–249

Cerebrospinal fluid, anesthetic agent effects on, 277
barbiturate effects on, 282
benzodiazepine effects on, 283
inhalation anesthetic effects on, 280
ketamine effects on, 284
opioid effects on, 282
pressure of, manipulation of, in traumatic brain injury, 429–430
propofol effects on, 283

Cervical spine, immobile or unstable, fiberoptic bronchoscopy in, 941
rigid laryngoscope for, 923
injuries of, with traumatic brain injury, 418, 420–421, 423
rheumatoid arthritis of, surgery for, 405–408

Cheek, injury of, in facemask use, 842

Cherubism, airway management in, 768

Chest massage techniques, in treatment of anesthesia-related cardiac arrest in children, 9–11

Chin, injury of, in facemask use, 842

Chin lift, for mask use, 836–837

Chin retainer bar, for facemask, 848–849

Chloral hydrate, and nitrous oxide, for office-based anesthesia in children, 204–205
for sedation of pediatric patients, 190

4-Chloro-m-cresol, in muscle biopsy, for malignant hyperthermia, 637

2-Chlorprocaine, for local anesthesia in children, 84–85

Cholinergic side-effects, of neuromuscular blockers in pediatric anesthesia, 53

Chotzen's syndrome, airway management in, 768

Christ-Siemans-Touraine syndrome, airway management in, 768

Chubby puffer syndrome, airway management in, 768

Circle of Willis, anatomy of, 248

Cleft and palate, airway management in, 768
repair of, 761–762

CLM laryngoscopes, 920

Clonidine, for analgesia in children, 68–72
for epidural analgesia in children, 123–124
for preemptive analgesia in children, 129

Closed Claims Project, description of, 491
design of, 486
influence of, 485–501
limitations of, 487–491
changing practice patterns and standards of care, 489–490
outcome bias, 490–491
poor interrater reliability, 490
retrospective bias and nonpartial participants, 490
unknown incidence, 487–489
outcome trends in, 492–500
airway trauma, 497–498
cardiovascular adverse events, 495
decreasing injury severity, 492–493
intraoperative awareness, 561–563
monitored anesthesia care claims, 499
neuraxial cardiac arrest, 496
office-based anesthetic injuries, 498
postoperative visual loss, 499–500
respiratory adverse events, 493–495
specific injury patterns, 495–496
spinal cord injuries, 497
ulnar nerve injuries, 496–497
ulnar neuropathy, 589–590

CMRO₂. *See Cerebral metabolic rate of oxygen consumption.*

Cocaine, for nasal anesthesia, in fiberoptic bronchoscopy, 944

Colloid oncotic pressure, in fluid management, 330, 334, 337

Colloids, cerebral effects of, 334–335
for traumatic brain injury, 426

Combitube. *See Esophageal-Tracheal Combitube.*

Communicating arteries, anatomy of, 248

Complications, of airway management. *See Airway management, complications of.*

Computed tomography, in traumatic brain injury monitoring, 454

Congenital anomalies, of airway, in pediatric patients, 757–759

Congenital cystic lesions, in neonates and infants, 155–156

Congenital diaphragmatic hernia, in neonates and infants, 157–158

Congenital lobar emphysema, in neonates and infants, 156

Connell facemask, 843

Continuous caudal catheter, for pediatric regional anesthesia, 90

Continuous positive airway pressure, with masks, 837, 839

Contracture test, for malignant hyperthermia, 635–637

Contrast injections, reactions to, versus hyperthermia, 631

Cook Airway Exchange Catheter EF, 917

Cormack-Lehane grades, of laryngoscopic view, 814–816, 819

Cornelia de Lange's syndrome, airway management in, 768

Corpectomy, for spinal metastasis, 408–410

Cortical blindness, postoperative, 615–616

Criancetomy, strip, endoscopic, 367–369

Craniosynostosis, repair of, 367–369, 398–399

Craniotomy, awake, in pediatric patients, 142–144, 400

Cretinism, airway management in, 768

Cricoarytenoid joint, rheumatoid arthritis of, 406–407

Cricoid cartilage, anatomy of, 741
pediatric, 748

Cricoid pressure, for regurgitation management, in traumatic brain injury, 422–423

Cricothyrotomy, in airway management, 828–829

Cri-du-chat syndrome, airway management in, 768

Croup, postextubation, 759–760

Crouzon disease, airway management in, 758–759, 768

Crystalloids, cerebral effects of, 332–333
for traumatic brain injury, 424

Cuff inflation, with ProSeal laryngeal mask airway, 881–882

Cuffed oropharyngeal airway, 856

Cyanoacrylate glues, for arteriovenous malformation embolization, 353–354

Cyclo-oxygenase-2 inhibitors, for analgesia in pediatric patients, background, 59–60
physiology, 60–64
selective, celecoxib, 64–65
parecoxib, 66–67
rofecoxib, 65–66

Cysts, airway management in,
bronchogenic, 776
epiglottic, 776
brain, neuroendoscopic treatment of, 366–367

Cystic hygroma, airway management in, 769

D

Dantrolene, for malignant hyperthermia, 643

Dead space, in facemask, 848

Decision-making, medical, examining autonomy in, 228–230
legal contours in, 234–235

Deep venous thrombosis, in spinal cord injury, 457
in subarachnoid hemorrhage, 448
risk of, reduction of, 487–488

Dental injuries, endotracheal intubation and, 504

Dental problems. *See Teeth.*

Dermal hypoplasia, focal, airway management in, 769

Desflurane, cerebral physiologic effects of, 277–278, 280
for brain protection, 319–320

Dexmedetomidine, for analgesia in pediatric patients, 72–73

Dextran, cerebral effects of, 334
for neurosurgery, 339

Diabetes insipidus, fluid management in, 341–342
in traumatic brain injury, 455

Diabetes mellitus, airway management in, 772–773

Diazepam, for seizures, in traumatic brain injury, 453

Difficult airway management, American Society of Anesthesiologists' guidelines for, 814-815, 821-824, 829-830
awake intubation in, 821-825, 828-829
bronchoscopy in, 826, 828
communication concerning, 830
cricothyrotomy in, 828-829
definitions of, 814
equipment cart for, 821
Esophageal-Tracheal Combitube for, 901-902
evaluation for, 814-819
fiberoptic intubation in, 825
in airway disorders, **767-787**
 infectious, 779-780
 list of, 768-771
 mediastinal masses, 776-778
 neoplastic, 772-775
 nonneoplastic noninfectious, 775-777
 stridor, 767, 772
in obstetrics, 819-821
in pediatric patients, 750, 755-761
laryngeal mask airways for, **863-870**
Mallampati classification of, 817-819
retrograde intubation in, 825-827
risk stratification in, 819-821
strategic plan for, 821

Digital nerve blocks, in children, 108-109

Dilatational cricothyrotomy, percutaneous, 828-829

Diverticulum, Zenker's, airway management in, 774

Doppler sonography, in cerebral blood flow measurement, 260-261
transcranial, for cerebral blood measurement, 251-252
in pediatric neuroanesthesia, 140-141

Dörge's emergency laryngoscope blade, 920

Double-lumen tubes, in single lung ventilation in infants and children, 168-169

Down syndrome, airway management in, 757-758, 769

DPT, for sedation of pediatric patients, 191

Droperidol, for postoperative nausea and vomiting, 716-717

Dural arteriovenous malformations, interventional neuroradiology for, 354

Dural puncture, neuraxial blockade and, 671-672

Dural venous sinuses, anatomy of, 249-250

Dysphagia, in airway management, 961

E

Ebselen, for vasospasm, in subarachnoid hemorrhage, 447

Edema, airway, extubation in, 760-761

 brain, in traumatic injury, 430
 treatment of, 335-337
 subglottic, endotracheal intubation and, 507

Edwards syndrome, airway management in, 769

Elderly persons, mask use in, 835

Electrocardiography, in obstructive sleep apnea, 798-800
 in subarachnoid hemorrhage, 381

Electrocorticography, in pediatric neurosurgery, 394

Electroencephalography, anesthetic selection for, 287-288
 for monitoring cerebral oxygenation in pediatric neuroanesthesia, 139-140
 in brain protection evaluation, 316-317
 in obstructive sleep apnea, 798-800
 in pediatric neurosurgery, 394

Electrolyte imbalance, in neurologic disorders, fluid management for, 341-343
 subarachnoid hemorrhage, 381

Electromyography, in obstructive sleep apnea, 798-800
 in pediatric neurosurgery, 394

Electro-oculography, in obstructive sleep apnea, 798-800

Electrophysiologic monitoring, anesthetic selection for, 287-288

Ellis-van Creveld syndrome, airway management in, 769

Embolism, air, in pediatric neurosurgery, 393, 399
 in stereotactic procedures, 371
 neuraxial blockade and, 674
 catheter, wire, and air, central access and, 576
 pulmonary, risk of, reduction of, 527-529

Embolization, of arteriovenous malformations, 353-354, 385-386

Emergency medicine, Esophageal-Tracheal Combitube for, 899
ProSeal laryngeal mask airway for, 885

Emphysema, congenital lobar, in neonates and infants, 156

Encephalocele, closure of, 397

Endarterectomy, carotid, anesthetic selection for, 287
cerebral oxygenation monitoring in, 303–304

Endobronchial injuries, endotracheal intubation and, 507

Endoscopy, for neurosurgery.
See Neuroendoscopy.

Endotracheal intubation, awake, 821–825, 828–829
complications of. *See Airway management, complications of.*
difficult. *See Difficult airway management.*
extubation in. *See Extubation.*
fiberoptic. *See Fiberoptic airway management.*
guides for, 914–918
in endoscopic strip craniectomy, 368
in obesity, 802–804
in obstructive sleep apnea, 802–804
in pediatric neurosurgery, 391
in pediatric patients, fiberoptic bronchoscope for, 757
in cleft palate repair, 762
in papilloma removal, 763–764
laryngoscopy for, 752
light wand for, 756–757
muscle relaxants for, 751–752
tubes for, 748–749, 752–753
in spinal cord injury, 456
in traumatic brain injury, 420–423
leak testing in, 761
retrograde, 825–827
stylets for, in pediatric patients, 756–757
lighted, 909–914
traumatic complications of, 503–507
with Combitube. *See Esophageal-Tracheal Combitube.*
with laryngeal mask airways, 863–870

Enflurane, cerebral physiologic effects of, 277–279

Enoximone, and rhabdomyolysis, 633

Epidermolysis bullosa, airway management in, 769

Epidural abscess, neuraxial blockade and, 671

Epidural anesthesia, for pediatric thoracic surgery, 171–174
for postoperative pain management in children, 120–121
adverse effects of, 124–126
caudal vs. lumbar or thoracic catheter insertion, 121
choice of local anesthetic agent, 121–122
epidural opioids, clonidine, and other additives, 122–124
patient-controlled, 124
sedatives, 124

Epidural block, for pediatric regional anesthesia, 90–93

Epidural hematoma, neuraxial blockade and, 669–670

Epiglottitis, airway management in, 779–780
anatomy of, 743
pediatric, 748
cysts of, airway management in, 776

Epilepsy, surgical treatment of, in pediatric patients, 399–400

Epinephrine, for anaphylaxis, 775
in treatment of anesthesia-related cardiac arrest in children, 13–14

Eschmann tracheal introducer, 914–915

Esmolol, for hypertension control, in aneurysm repair, 382

Esophageal obturator airway, 893–894
Combitube as improvement on. *See Esophageal-Tracheal Combitube.*

Esophageal perforation, endotracheal intubation and, 505

Esophageal-Tracheal Combitube, 893–907, 929
advantages of, 902–903
anatomic considerations in, 894–895
complications of, 903–904, 969
contraindications to, 903–904
description of, 894–895
disadvantages of, 903–904
for cardiopulmonary resuscitation, 899–900
for difficult airways, 901–902
for elective surgery, 902
for trauma, 900–901
history of, 893–894
insertion of, 895–898
placement confirmation for, 898
uses of, 899–902

Esophagus, air aspiration in, with ProSeal laryngeal mask airway, 888–889
injury of, in airway management, 814

perforation of, from Esophageal-Tracheal Combitube, 903

Zenker's diverticulum of, airway management in, 774

Ethical dilemmas for pediatric surgical patients, 227-240

- ethical problem solving, 230-234
- examining autonomy in medical decision-making, 228-230
- judicial approach, 235-238
- legal contours in medical decision-making, 234-235

Etomidate, cerebral physiologic effects of, 282-283

- electrophysiologic monitoring interactions with, 287-288
- for brain protection, 317
- for intubation, in traumatic brain injury, 421
- oxygen tension effects of, 307

Exertional rhabdomyolysis, clinical features of, 642-643

Exubation, in obesity, 804-805

- in obstructive sleep apnea, 804-805
- laryngotracheal stenosis after, 964
- of pediatric patients, 759-761
- in cleft palate repair, 762
- in difficult situations, 760-761

Eyes, protection of, in facemask use, 841

F

Facemasks, 840-850

- adjuncts to, 848-849
- application of, 844-845
- attachment to circuit, 844
- dead space in, 848
- description of, 841
- disposable, 843-844
- facial structures and, 841-843
- fit of, 847-848
- fogging of, 840
- for pediatric patients, 846
- holding of, 845-847
- inflation of, 844
- maneuvers for, 836-840
- potential difficulties with, 834-840
- preparing of, 844
- purpose of, 840
- selection of, 843-844
- two-handed ventilation with, 839
- types of, 843-844
- vomiting with, 849-850

Facial artery and nerve, compression of, in facemask use, 842

Failed back syndrome, spinal fusion in, 411

Farber's disease, airway management in, 769

Fastrach laryngeal mask airway, 866-869

Femoral artery catheterization, monitoring of, 584

Femoral nerve block, in children, 107

Fentanyl, for analgesia in pediatric patients, 75-76

- for aneurysm repair, 382
- for epidural analgesia in children, 123
- for epilepsy surgery, 400
- for pediatric neurosurgery, 392
- for postoperative pain management in children, 118
- for sedation of pediatric patients, 191

Fetal alcohol syndrome, airway management in, 769

Fetal surgery, anesthesia for, 211-226

- anesthetic management, avoidance of fetal asphyxia, 218-219
- avoidance of teratogenic agents, 217-218
- ex utero intrapartum treatment procedure, 222-223
- fetal anesthesia and monitoring, 219-220
- maternal safety, 215-217
- prevention of preterm labor, 221-222
- relaxation of uterus, 220-221
- classification of malformations, 211-212
- fetal treatment center, 215

Fiberoptic airway management, 935-953. *See also Bronchoscopy; fiberoptic.*

- anesthesia for, 944-948
- clinical aspects of, 943-944
- contraindications for, 942
- equipment for, 938-941
- care of, 951-952
- failure of, 950-951
- for awake intubation, 825
- for difficult situations, 825-828
- in pediatric patients, 757
- indications for, 941-942
- laryngeal mask airway in, 865
- laryngoscopes for, 923-931
- patient preparation for, 944
- teaching methods for, 935-938
- techniques for, 935-938, 948-950

Fiberoptic Lighted Intubation Stylet, 911

Fistula, tracheoesophageal, airway management in, 771

Fistulae, carotid cavernous, interventional neuroradiology for, 354

Flex tip laryngoscopes, 920-922

Flipper laryngoscope, 920

Fluid management, in neurosurgery and neurologic disorders, 329-346
aneurysm repair, 383-384
colloid oncotic pressure and, 330, 334, 337
diabetes insipidus, 341-342
electrolyte disturbances in, 341-343
fluid restriction in, 337-338
for edema control, 335-337
for intracranial pressure control, 335-337
hematocrit and, 332
hemodilution and, 332
in cerebral salt-wasting syndrome, 342
interventional neuroradiology, 348-349
intraoperative, 338-339
movement between capillaries and tissues and, 330-332
osmotic pressure and, 330
pediatric, 392
postoperative, 339
solutions for, 332-335
spinal cord injury, 340-341
stroke, 340
subarachnoid hemorrhage, 340, 380, 446
syndrome of inappropriate anti-diuretic hormone secretion, 342
traumatic brain injury, 339, 423-426
water disturbances in, 341-343

Focal dermal hypoplasia, airway management in, 769

Foraminotomy, keyhole, 372

Foreign body removal, bronchoscopy for, 764-765

Free radicals, inhibitors of, for brain protection, 322-324

Freeman-Sheldon syndrome, airway management in, 758-759, 769

Frova Intubating Introducer, 915-916

Furosemide, for increased intracranial pressure, 335-336
in pediatric patients, 393

Fusion, spinal, lumbar interbody, 410-412

G

Gamma-aminobutyric acid receptors, anesthetic agent interactions with, 266

Gastric tube insertion, with ProSeal laryngeal mask airway, 884-885

Gastrointestinal system, ProSeal laryngeal mask effects on, 876-877

General anesthesia, for arteriovenous malformation embolization, 385-386
for interventional neuroradiology, 350
mechanism of action of, 271-272

Genioglossus muscles, activity of, 791-793

Giantism, airway management in, 774

Glasgow Coma Scale, in traumatic brain injury, 418, 449

Glossolabiopexy, 762-763

Glossopharyngeal nerve block, in fiberoptic bronchoscopy, 944-945

Glottic Aperture Seal Airway, 930-931

Glucose, control of, for brain protection, 321
solutions, cerebral effects of, 332-333, 335
for traumatic brain injury, 426

Glues, cyanoacrylate, for arteriovenous malformation embolization, 353-354

Glutamate, inhibitors of, for brain protection, 322-324
receptors for, anesthetic agent interactions with, 266-268

Glycopyrrolate, for bradycardia, in carotid artery angioplasty, 357
for fiberoptic bronchoscopy, 944

Goiter, airway management in, 776

Goldenhar syndrome, airway management in, 758-759, 769

Gorlin-Goltz syndrome, airway management in, 769

Granuloma, formation, endotracheal intubation and, 507
laryngeal, in airway management, 962-963

Guedel airway, 855
Guides, for endotracheal intubation, 914-918

H

Halothane, cerebral physiologic effects of, 275, 277-280
for brain protection, 286
Head and neck nerve blocks, in children, 98-102
Head-and-shoulder position, for mask use, 837-838
Head tilt, for mask use, 836
Head turn maneuver, for mask use, 837
Headache, in subarachnoid hemorrhage, 378
 neuraxial blockade and, 673-674
Heart, congenital disorders of, in pediatric neurosurgical patients, 390
Heat stroke, exertional, clinical features of, 642-643
Heine Flex Tip laryngoscope, 920
Hematocrit, reduction of, in fluid management, 332
 versus cerebral blood flow, 256-257
Hematoma, brain, in shaken baby syndrome, 401
 neuroendoscopic evacuation of, 366-367
 epidural, neuraxial blockade and, 669-670
Hemodilution, in fluid management, 332
 for traumatic brain injury, 432
 for vasospasm, in subarachnoid hemorrhage, 380
Hemodynamics, evaluation and stabilization of, in traumatic brain injury, 423-426
 monitoring, for neuroanesthesia, in pediatric patients, 138-139
Hemoglobin saturation, measurement of, in jugular venous bulb, 294-297, 454
Hemophilia, airway management in, 769
Hemorrhage, intracranial, in stroke, 441
 subarachnoid. *See Subarachnoid hemorrhage.*
Hemorrhagic shock, hypertonic solutions for, 336-337
Henderson laryngoscope blades, 919

Heparin, and epidural hematoma, 670
for interventional neuroradiology, 350-352

Hereditary angioneurotic edema, airway management in, 769

Hernia, congenital diaphragmatic, in neonates and infants, 157-158

Hetastarch, cerebral effects of, 334
for traumatic brain injury, 426
hypertonic, 337

Histamine release, as side-effect of neuromuscular blockers in pediatric anesthesia, 53

Histiocytosis X, airway management in, 769

Huffman laryngoscope blade, 922

Human immunodeficiency virus infection, airway management in, 780

Hunter's syndrome, airway management in, 769

Hurler syndrome, airway management in, 770

Hydrocephalus, in subarachnoid hemorrhage, 381, 445
 treatment of, 397-398
 endoscopic, 363-366

Hyoid muscles, activity of, 791-793

Hypercarbia, differential diagnosis of, 627-629
 with ProSeal laryngeal mask airway, 888

Hypercarbia/hypercapnia, cerebral blood flow in, 254-256, 259

Hyperemia, after arteriovenous malformation removal, 386

Hyperglycemia, control of, for brain protection, 321

Hyperkalemic periodic paralysis, clinical features of, 653

Hypertension, after aneurysm repair, 384
 cerebral blood flow limits in, 260
 in subarachnoid hemorrhage, 378
 in traumatic brain injury, 428-429
 induced, for interventional neuroradiology, 352
 for vasospasm, in subarachnoid hemorrhage, 380
pulmonary, in obstructive sleep apnea, 797

Hyperthermia, clinical features of, 627-628
 differential diagnosis of, 628-632
 malignant. *See Malignant hyperthermia.*

Hypertonic solutions, cerebral effects of, 333, 336-337
for traumatic brain injury, 424

Hyperventilation, in traumatic brain injury, hypocapnia in, 429, 431

Hypervolemic therapy, for vasospasm, in subarachnoid hemorrhage, 446

Hypocapnia/hypocapnia, cerebral blood flow in, 254-256, 259
in hyperventilation, in traumatic brain injury, 429

Hypoglossal nerve, injury, in oral airway use, 860
paralysis, laryngeal mask airway and, 509

Hyponatremia, in subarachnoid hemorrhage, 448

Hypopharynx, anatomy of, 739-740
muscle activity of, 791-793

Hypotension, in traumatic brain injury, 423-426
induced, for aneurysm repair, 383
for interventional neuroradiology, 351-352
neuraxial blockade and, 681-683

Hypothermia, cerebral blood flow in, 254
induced, for aneurysm repair, 384
for arteriovenous malformation hemorrhage, 386
for brain protection, 320-321
for increased intracranial pressure, 453
for traumatic brain injury, 434, 453

Hypotonic solutions, for traumatic brain injury, 426

Hypovolemia, in traumatic brain injury, 423-426

Hypoxemia, in postanesthesia care unit, 516-517

Hypoxia, and hypoxemia, cerebral blood flow in, 256, 259
in traumatic brain injury, 432
with ProSeal laryngeal mask airway, 888

I

Ibuprofen, for postoperative pain management in children, 128

I-cell disease, airway management in, 770

Iliinguinal and iliohypogastric nerve block, in children, 103-104

Imagica Fiberoptic Lighted Stylet, 911

Induction of anesthesia, in pediatric patients, 751-752, 755
for pediatric neurosurgery, 391

Infants. *See Pediatric patients.*

Infections, central access and, 577
neuraxial blockade and, 671-672

Inhalation anesthetics, cerebral blood flow effects of, 259
cerebral physiologic effects of, 277-280, 285
for brain protection, 286-287, 319-320
for traumatic brain injury, 432
oxygen tension effects of, 307

Inhaled anesthesia delivery systems, 539-554
checkout recommendations for, 550-553
circle system in, 548-550
flow proportioning system in, 544-545
flowmeter assembly and vaporizer manifold in, 543-544
gas supply in, 542-543
generic machine in, 541
vaporizers in, 545-548

Inotropic phosphodiesterase inhibitors, and rhabdomyolysis, 633

Insulin, for glucose control, in brain protection, 321

Intensive care, Esophageal-Tracheal Combitube in, 900
neuromuscular blockers in pediatric patients in, 54-55
ProSeal laryngeal mask airway in, 885-886

Intercostal nerve blocks, in children, 103

Interposed abdominal compression cardiopulmonary resuscitation, in treatment of anesthesia-related cardiac arrest in children, 10

Interventional neuroradiology, 347-359
anesthetic techniques for, 349
anticoagulation in, 350-351
concerns in, 347
crisis management in, 352-353
definition of, 347
for aneurysm ablation, 355-356
for angioplasty, 356-357
for arteriovenous malformations, 353-354
for carotid cavernous fistulae, 354
for carotid occlusion, 355
for pediatric patients, 401-402
for spinal cord lesions, 355

for stenting procedures, 356–357
for thrombolysis in stroke, 357
for vein of Galen malformations, 354–355
for venous angioma sclerotherapy, 356
for vertebral artery fistulae, 353–354
general anesthesia for, 350
induced hypertension in, 352
induced hypotension in, 351–352
intravenous sedation in, 350
monitoring in, 348–349
postoperative management in, 353
preanesthetic considerations in, 348
radiation safety in, 349
superselective anesthesia functional examination in, 351
vascular access in, 348–349

Intracranial hemorrhage, in stroke, 441

Intracranial optic tract, in postoperative blindness, 609

Intracranial pressure, anesthetic agent effects on, 285–286
control of, in aneurysm repair, 382
increased, in stroke, 444
 in subarachnoid hemorrhage, 378, 380–381
 in traumatic brain injury, 450–453
 airway function and, 420
 intubation effects on, 421
 treatment of, 426–434
 nitrous oxide causing, 280–281
 treatment of, 335–337

ketamine effects on, 284

nitrous oxide effects on, 285–286

opioid effects on, 281–282

succinylcholine effects on, 284

Intravascular fluids, in treatment of anesthesia-related cardiac arrest in children, 12–13

Intubation, endotracheal. *See* *Endotracheal intubation*.

Invasive monitoring, complications of, 571–588
 in arterial catheterization, 582–584
 femoral and brachial arterial lines, 584
 radial artery pseudoaneurysms, 584
 vascular insufficiency, 582–584

in central access, 571–578
 arterial injuries, 573–575
 cardiac injuries, 575–576
 catheter, wire, and air embolism, 576
 infections, 577
 pneumothorax, 571–572

thrombosis, 577–578
venous injuries, 572–573

in pulmonary artery catheterization, 578–582
 arrhythmias, 578
 catheter knotting, 580
 outcomes of, 580–582
 pulmonary artery perforation, 578–580

INVOS series of cerebral oximeters, 299–304

Ion channels, anesthetic agent interactions with, 265–272

Ischemia, brain protection from. *See* *Brain protection of*
 optic nerve, in spinal surgery, 412–414

Ischemic optic neuropathy, in postoperative blindness. *See* *Postoperative blindness*.

Isoflurane, cerebral physiologic effects of, 275, 277–280
 for aneurysm repair, 382
 for brain protection, 320
 for pediatric neurosurgery, 392
 oxygen tension effects of, 307

Isotonic solutions, cerebral effects of, 332–333

J

Jaw thrust, for mask use, 837

Jet ventilation, complications of, 969

Jewelry, mask use with, 835

Judicial decisions, on medical treatment of children, 235–238

Jugular venous bulb oxygen saturation, 294–297
 clinical use of, 295–297
 in traumatic brain injury, 454
 methodology for, 294–295

Juvenile rheumatoid arthritis, airway management in, 759

K

Kainate receptors, anesthetic agent interactions with, 267–268

Kaposi's sarcoma, airway management in, 780

Ketamine, cerebral physiologic effects of, 284, 286
 electrophysiologic monitoring interactions with, 287–288
 for brain protection, 286–287, 318–319

for intubation, in traumatic brain injury, 422

for office-based anesthesia in children, 207

for sedation of pediatric patients, 191–192

mechanism of action of, 267–268

Ketorolac, as adjunct to office-based anesthesia for children, 206

for postoperative pain management in children, 128

Keyhole foraminotomy, 372

Klippel-Feil syndrome, airway management in, 759, 770

L

Labetalol, for hypertension control, in aneurysm repair, 382

Lactate levels, cerebral, versus oxygen tension, 307–308

Lactated Ringer's solution, for neurosurgery, 339

for traumatic brain injury, 424

Laminectomy, for spinal metastasis, 407

Laparoscopic surgery, to reduce perioperative respiratory complications, 526

Laparoscopy, for lumbar spinal fusion, 412

Larsen's syndrome, airway management in, 770

Laryngeal injuries, endotracheal intubation and, 506

Laryngeal mask airways. **863–870**

- classic, 863–866
- versus ProSeal mask, 872, 874
- complications of, 968
- Fastrach, 866–869
- for difficult intubation, 824–825
- for pediatric patients, 753–754
- in difficult situations, 756
- in glossolabiopexy, 763

ProSeal. *See ProSeal laryngeal mask airway*

- technique for, 864–865
- traumatic complications of, 507–509
- types of, 928–931

Laryngeal nerve block, in fiberoptic bronchoscopy, 945–948

Laryngeal nerve injuries, laryngeal mask airway and, 508–509

Laryngeal Tube, 929

Laryngopharynx, muscle activity of, 791–793

Laryngoscopy, fiberoptic devices for, 923–931, 948–950

for intubation, in traumatic brain injury, 420–421

for stenosis, 965

in pediatric patients, 749, 752

equipment for, 753

in difficult situations, 755–756

technique for, 752

rigid devices for, 918–923

design of, 918

flexible tip (levering), 920–922

for anterior larynx access, 922

for cervical spine instability or immobility, 923

for limited mouth opening, 919–922

for small intraoral cavity, 923

for sternal space restriction, 922

Macintosh, 919

Miller, 919

view of, grades of, 814–816

Mallampati classification of, 817–819

Larynx, anatomy of, 740–745

pediatric, 744–745, 747–748

anesthesia for, in fiberoptic bronchoscopy, 945–948

anterior, access to, rigid laryngoscope for, 922

functions of, 740–741

granulomas of, in airway management, 962–963

injury of, in airway management, 959–969

papillomatosis of, airway management in, 770, 776

stenosis of, in acromegaly, 774

in airway management, 963–966

Laser surgery, for papillomatosis of airway, 763–764

Lateral femoral cutaneous nerve block, in children, 107

Latex allergy, in pediatric patients, 401

Leopard syndrome, airway management in, 770

Levering laryngoscopes, 920–922

Levobupivacaine, for local anesthesia in children, 85

Licox probe, for cerebral oxygen tension monitoring, 305–308

Lidocaine, for fiberoptic bronchoscopy anesthesia, laryngotracheal, 946
nasal, 944
pharyngeal, 945
for hypertension control, in aneurysm repair, 382
for local anesthesia in children, 85
mechanism of action of, 271

Light wand, for airway management, in pediatric patients, 756-757

Lighted stylets, for endotracheal intubation, 909-914

Linder nasopharyngeal airway, 851

Lingual nerve, block of, in fiberoptic bronchoscopy, 944-945
injury of, in oral airway use, 860

Lip injuries, endotracheal intubation and, 504

Lipophilicity, of anesthetic agents, 265-266

Lips, cleft, 761-762, 768
compression of, in facemask use, 842
injury of, in airway management, 958-959
in oral airway use, 859
with ProSeal laryngeal mask airway, 887
tongue suturing to, in Pierre-Robin syndrome, 762-763

Liver, disorders of, in rheumatoid arthritis, 406

Local anesthetics, anesthetic agent interactions with, 270-271
cerebral physiologic effects of, 284
perioperative respiratory complications of, 526
pharmacology and toxicity of, for pediatric regional anesthesia, 84-87

Lower extremity blocks, in children, 105-109

Low-molecular-weight heparin, and epidural hematoma, 670

Lubricants, for nasal airways, 853

Ludwig's angina, airway management in, 780

Lumbar spine, fusion of, 410-412

Lung cancer, airway management in, 776

M

Macintosh laryngoscope blade, 919

Macroglossia, endotracheal intubation and, 505

Magnesium, in treatment of anesthesia-related cardiac arrest in children, 14

Magnetic resonance imaging, in traumatic brain injury monitoring, 454
metal facemask parts and, 844

Malformations, fetal, classification of, 211-212

Malignant hyperthermia, 623-651
clinical features of, 623-626
counseling for, 645
diagnosis of, 635-637
differential diagnosis of, 630-632
elective anesthesia in, 645-646
exertional rhabdomyolysis and, 642-643
incidence of, 626-627
management of, 643-645
masseter muscle rigidity in, 639-642
molecular genetics of, 638-639
pathophysiology of, 633-635

Mallampati classification, of intubation difficulty, 817-819

Mandible, hypoplasia of, airway management in, 758-759

Mannitol, for increased intracranial pressure, 335-336, 452-453
in pediatric patients, 393
in traumatic brain injury, 430

Marfan syndrome, airway management in, 770

Masks. *See also Facemasks: Laryngeal mask airways.*
continuous positive airway pressure for, 837, 839
difficulty with, 814
fogging of, 840
maneuvers for, 836-840
potential difficulties with, 834-840
two-handed ventilation with, 839

Masseter muscle rigidity, in malignant hyperthermia, 639-642

Maxillary nerve block, in fiberoptic bronchoscopy, 944

Meckel's syndrome, airway management in, 770

Median cleft face syndrome, airway management in, 770

Mediastinum, masses in, airway management in, 776-778

Medical decision-making, examining autonomy in, 228-230
legal contours in, 234-235

Mepivacaine, for local anesthesia in children, 85

Metabolism, cerebral. *See Cerebral metabolic rate of oxygen consumption.*

Metastatic tumors, spinal, surgical treatment of, 407–410

Methohexitol, cerebral physiologic effects of, 282

Methylprednisolone, for spinal cord injury, 456–457

Microdialysis, cerebral, for subarachnoid hemorrhage, 448

Micrognathia, airway management in, 758–759

Midazolam, cerebral physiologic effects of, 283
for pediatric patients, 391
for premedication, for hydrocephalus treatment, 365
for pediatric patients, 751
sedation of pediatric patients, 191

Miller laryngoscope blade, 919

Minimally invasive neurosurgery, 361–375
endoscopic, 363–369
for abscess drainage, 366–367
for biopsy, 366
for cyst treatment, 366–367
for hematoma treatment, 366–367
for hydrocephalus treatment, 363–366
for strip craniectomy, 367–369
for syringomyelia treatment, 367
keyhole foraminotomy, 372
radiosurgery, 372
stereotactic, 369–371
thoracoscopic sympathectomy, 371–372

Möbius syndrome, airway management in, 770

Monitoring, invasive. *See Invasive monitoring.*

Monitoring standards, adherence to, for reducing risk of anesthesia-related cardiac arrest in children, 21–22

Morphine, for analgesia in pediatric patients, 73–75
for postoperative pain management in children, 116–118

Morquio syndrome, airway management in, 770

Mouth. *See also Lips; Oral cavity; Tongue.*
limited opening of, fiberoptic bronchoscopy in, 941
rigid laryngoscope for, 919–922

Moyamoya syndrome, anesthetic management in, 400–401

Multimodal postoperative pain management, for children, 126–129

Muscle biopsy, for malignant hyperthermia, 636–637

Muscle relaxants, cerebral physiologic effects of, 284
electrophysiologic monitoring interactions with, 287–288
for intubation, in pediatric patients, 751–752
in traumatic brain injury, 422
for pediatric neurosurgery, 391–392

Muscular dystrophy, myotonic, 647–651

Music, perioperative, for reducing preoperative anxiety in children, 37–38

Myelomeningocele, closure of, 397

Myogenic mechanism, of cerebral blood flow regulation, 258–259

Myositis ossificans, airway management in, 770

Myotonia, 646–655
cardiac complications of, 648
hyperkalemic periodic paralysis in, 653
in pregnancy, 651–652
muscular dystrophy, 647–651
myotonia congenita, 651–652
myotonia fluctuans, 652–653
normokalemic periodic paralysis in, 654–655
paramyotonia congenita, 652–655
respiratory complications of, 648–650

N

Narcotics. *See Opioids.*

Nasal airways, 850–854
complications of, 852, 854
contraindications for, 852
description of, 850
false passage of, 854
for pediatric patients, 754
indications for, 852
polyps interfering with, 775
purpose of, 850
types of, 850–852
use of, 852–854

Nasal intubation, in traumatic brain injury, 421
traumatic complications of, 504

Nasal structures. *See Nose.*

Nasopharynx, airways for. *See Nasal airways.*

- anatomy of, 737–738
- anesthesia for, in fiberoptic bronchoscopy, 944
- muscle activity of, 791–793

National Institute of Health Stroke Scale Score, 442

Nausea and vomiting, postoperative. *See Postoperative nausea and vomiting.*

Near-infrared spectroscopy, for transcranial cerebral oximetry, 297–304

Neck, circumference of, in obstructive sleep apnea, 797–798

- evaluation of, in pediatric patients, 750–751
- injury of, in facemask use, 842
- limited motion of, airway management in, in pediatric patients, 759
- in rheumatoid arthritis, 773–774

fiberoptic bronchoscopy in, 941

rigid laryngoscope for, 923

Neonates, neurosurgery in, emergency, 397

- for hydrocephalus, 365
- risks of, 390

surgical lesions of chest in, 153–160

Nerve blocks, for fiberoptic bronchoscopy, 944–948

Nerve injuries, peripheral blockade and, 696–699

Nerve root integrity, monitoring, in pediatric neuroanesthesia, 146–148

Neuraxial blockade, complications of, 669–693

- drug-induced, 677–685
- cardiac, 683–684

- Closed Claims Project data on, 496
- hypotension, 681–683
- in subdural injection, 680–681
- in total spinal block, 679–680
- neurologic injuries, 677–678
- respiratory, 684–685
- systemic toxicity, 678–679
- thermoregulatory dysfunction, 681

in combined spinal-epidural anesthesia, 676–677

needle-induced, 669–676

- back pain, 672–673
- broken or knotted catheters, 676
- epidural hematoma, 669–670
- headache, 673–674

infections, 671–672

neurologic injuries, 674–675

pneumocephalus and air embolism, 674

Neuroanesthesia, 137–151

- detection of seizure foci, 141–142
- awake craniotomy, 142–144
- developmental differences in central nervous system function, 137–138
- hemodynamic monitoring, 138–139
- monitoring anesthetic depth in children, 148–149
- monitoring spinal cord and nerve root integrity, 144–148
- monitors of cerebral oxygenation, cerebral oximetry, 141
- electroencephalography, 139–140
- transcranial Doppler, 140–141

Neurocritical care, 441–462

- in spinal cord injury, 340–341, 455–457
- in stroke, 340, 357, 441–444
- in subarachnoid hemorrhage. *See Subarachnoid hemorrhage.*
- in traumatic brain injury. *See Traumatic brain injury.*

Neuroendoscopy, 363–369

- for abscess drainage, 366–367
- for brain biopsy, 366
- for cyst drainage, 366–367
- for hematoma evacuation, 366–367
- for hydrocephalus correction, 363–366
- for strip craniectomy, 367–369
- for syringomyelia treatment of, 367

Neurogenic mechanism, of cerebral blood flow regulation, 259

Neuroleptic malignant syndrome, versus hyperthermia, 630–631

Neurologic function, preserving, in treatment of anesthesia-related cardiac arrest in children, 18

Neurologic injuries, neuraxial blockade and, 674–675, 677–678

Neuromuscular blockade, intraoperative awareness during, 565

Neuromuscular blocking drugs in pediatric anesthesia, age-related differences in potency, 45–47

- disease states, 54
- duration of action, 47, 50
- intensive care unit setting, 54–55
- intramuscular injection, 51
- kinetics and dynamics, 50–51
- reversal, 54

side-effects, cholinergic, 53
depolarizing effects of
succinylcholine, 51-53
histamine and anaphylaxis, 53

Neuropathy, ischemic optic, in postoperative blindness. *See Postoperative blindness.*
ulnar. *See Ulnar neuropathy.*

Neurophysiologic monitoring, anesthetic selection for, 287-288

Neuroradiology, interventional. *See Interventional neuroradiology.*

Neurosurgery, anesthetic agents for, mechanism of action of, 265-291
brain protection during. *See Brain protection of.*
cerebral blood flow and. *See Cerebral blood flow.*
cerebral oxygenation monitoring in, 293-313
fluid management in. *See Fluid management, in neurosurgery and neurologic disorders.*
for traumatic brain injury. *See Traumatic brain injury.*
interventional radiology, 347-359
intracranial vascular, 377-388
minimally invasive, 361-375
pediatric, 389-404
spinal, 405-415

Neurotransmitters, anesthetic agent interactions with, 266-272
excitatory, inhibitors of, for brain protection, 322-324
in cerebral blood flow regulation, 259

Neurotrend probe, for cerebral oxygen tension monitoring, 305-308

Neurovascular compression, laryngeal mask airway and, 509

Nicaraven, for vasospasm, in subarachnoid hemorrhage, 447

Nicotinic acetylcholine receptor, anesthetic agent interactions with, 269

Nimodipine, for vasospasm, in subarachnoid hemorrhage, 380, 446

NIRO 500/1000 cerebral oximeters, 299-301

Nitric oxide, in cerebral blood flow regulation, 254-255, 258
inhibitors of, for brain protection, 322-324

Nitroprusside, for vasospasm, in subarachnoid hemorrhage, 447

Nitrous anesthesia, and postoperative nausea and vomiting, 713-714
intraoperative awareness during, 565

Nitrous oxide, cerebral physiologic effects of, 280-281, 285-286
for brain protection, 319
for induction, in pediatric patients, 751, 755-756
for pediatric neurosurgery, 391-392
for sedation of pediatric patients, 191
for traumatic brain injury, 432

NMDA (*N*-methyl-D-aspartate) receptors, anesthetic agent interactions with, 267-268

N-Methyl-D-aspartate receptors, anesthetic agent interactions with, 267-268

Noack's syndrome, airway management in, 770

Nonarteritic anterior ischemic optic neuropathy, in postoperative blindness, 612-614

Nonsteroidal anti-inflammatory drugs (NSAIDs), and epidural hematoma, 670
as adjunct to office-based anesthesia for children, 206

Noonan's syndrome, airway management in, 770

Normokalemic periodic paralysis, clinical features of, 654-655

Nose, airways for. *See Nasal airways.*
anatomy of, 733-736
pediatric, 749
anesthesia for, in fiberoptic bronchoscopy, 944
function of, 736
injury of, in airway management, 956-958
inspection of, for nasal airway use, 853
polyps of, airway management in, 775, 956
pressure on, in facemask use, 842

O

Obesity. *See also Obstructive sleep apnea, in obesity.*
airway management in, 773, 835

Obstetrics, difficult airway management in, 819-821

Obstruction, airway, with ProSeal laryngeal mask airway, 888

Obstructive sleep apnea, airway management in, 771, 801–806
apnea-hypopnea index in, 799
in obesity, 789–811
airway management in, 801–806
anesthetic drug effects in, 801
arousal in, 795–796
definition of, 790
diagnosis of, 797–801
epidemiology of, 789
extubation in, 804–805
intubation in, 802–804
opioid therapy in, 805–806
pathophysiology of, 791–797
preoperative evaluation in, 801–802
versus normal pharyngeal muscle activity, 791–793
versus normal sleep, 793
postoperative monitoring in, 760

Ocular circulation, in postoperative blindness, 610

Odontoid, resection of, in rheumatoid arthritis, 407

Office-based anesthesia for children, 195–210
considerations in establishing, facility and equipment, 201–202
patient selection, 202–203
personnel, 203–204
drugs and anesthetic techniques, 204–207
overview, rationale, 195–196
safety, 197–201
recovery and discharge, 207–208
regional anesthesia, 207

Oncotic pressure, in fluid management, 330, 334, 337

Ondansetron, for postoperative nausea and vomiting, 716–717, 719

Ophthalmic nerve block, in fiberoptic bronchoscopy, 944

Opiate anesthesia, intraoperative awareness during, 565

Opioid infusions, for postoperative pain management in children, 115–118

Opioids, and postoperative nausea and vomiting, 713
as adjunct to hospital- vs. office-based anesthesia for children, 205
cerebral physiologic effects of, 281–282
for analgesia in pediatric patients, 73–77
for brain protection, 318
postoperative, in obstructive sleep apnea, 805–806

receptors for, anesthetic agent interactions with, 269–270

Optiz-Frias syndrome, airway management in, 770

Optic nerve, in postoperative blindness, 608–609
injury in spinal surgery, 412–414

Optic neuropathy, ischemic, in postoperative blindness. *See Postoperative blindness.*

Oral airways, 854–860
complications of, 859–860
contraindications for, 857
description of, 855
for pediatric patients, 755
indications for, 856–857
purpose of, 854
types of, 855–856
use of, 857–859

Oral cavity, airways for. *See Oral airways.*
carcinoma of, airway management in, 775
injury of, in airway management, 958–959
in facemask use, 842
Ludwig's angina of, 780
small, rigid laryngoscope for, 923

Oralet, for sedation of pediatric patients, 191

Oral-facial-digital syndrome, airway management in, 770

Oropharynx, anatomy of, 738–739
anesthesia for, in fiberoptic bronchoscopy, 944–945
injury of, in airway management, 958–959
muscle activity of, 791–793
redundant tissue in, in acromegaly, 774
small, fiberoptic bronchoscopy in, 941

Osmolality, of blood, fluid management and, 329–330

Osmotic pressure, fluid management and, 329–330

Osteogenesis imperfecta, airway management in, 770

Ovassapian airway, 855

Oximetry, cerebral, for monitoring cerebral oxygenation in pediatric neuroanaesthesia, 141
transcranial, 297–304

Oxygen consumption, cerebral metabolic rate of. *See Cerebral metabolic rate of oxygen consumption.*

Oxygen saturation, in obstructive sleep apnea, 798-800, 803-804

Oxygen tension, cerebral, monitoring of, 305-308
in cerebral blood flow regulation, 256, 259

Oxygen therapy, for traumatic brain injury, 431-432

Oxygenation monitoring, cerebral, 293-313
difficulty with, 294
in pediatric neuroanesthesia, 294-313
cerebral oximetry, 141
electroencephalography, 139-140
transcranial Doppler, 140-141
jugular venous bulb oxygen saturation in, 294-297, 454
oxygen tension, 305-308
transcranial, 297-304
types of, 294

P

Pain, radicular, keyhole foraminotomy for, 372

Pain management, acute and extended postoperative, in children, 115-135
epidural analgesia, 120-121
adverse effects, 124-126
caudal vs. lumbar or thoracic catheter insertion, 121
choice of local anesthetic agent, 121-122
epidural opioids, clonidine, and other additives, 122-124
patient-controlled, 124
sedatives, 124
multimodal postoperative pain management, 126-127
complementary therapies, 127-128
nonopiod analgesics, 128
preemptive analgesia, 129
opioid infusions, 115-118
other regional anesthesia techniques, 126
patient-controlled analgesia, 119-120
preparing the child for discharge, 129-130

Palate, cleft. *See Cleft and palate.*

Pancuronium, for pediatric neurosurgery, 391

Papaverine, for cerebral vasospasm, 356, 380

Papillomatosis, airway, airway management in, 763-764, 770, 776

Paralysis, neuraxial blockade and, 677

Parasympathetic nervous system, in cerebral blood flow regulation, 254

Parecoxib, as selective cyclo-oxygenase-2 inhibitor, 66-67

Parental presence during induction of anesthesia, benefits vs. drawbacks of, 34-37

Patau's syndrome, airway management in, 771

Patient-controlled analgesia, for postoperative pain management in children, 119-120, 124

Patil Two-Part Intubation Catheter, 915

Patil-Syracuse facemask, 843, 949

PbtO₂ (cerebral oxygen tension), monitoring of, 305-308

Pediatric anesthesia, new concepts and techniques in, anesthesia for fetal surgery, 211-226
anesthesia-related cardiac arrest in children, 1-28
ethical dilemmas for pediatric surgical patients, 227-240
neuroanesthesia, 137-151
neuromuscular blocking drugs in pediatric anesthesia, 45-58
new concepts in acute and extended postoperative pain management in children, 115-135
novel concepts for analgesia in pediatric surgical patients, 59-82
office-based anesthesia for children, 195-210
pediatric thoracic anesthesia, 153-180
practical pediatric regional anesthesia, 83-113
psychological preparation of the parent and pediatric surgical patient, 29-44
sedation and analgesia in pediatric patients for procedures outside the operating room, 181-194

Pediatric patients, airway management in, 391
anatomic considerations in, 744-745, 747-749

craniosynostosis treatment, 367-369, 398-399

developmental considerations in, 389-390

emergency, 397

epilepsy treatment, 399-400

equipment for, 752-755

extubation in, 759-761

facemasks for, 846

history taking for, 749-751

hydrocephalus treatment, 363-366, 397-398

in anesthesia induction, 751-752, 755-756

in congenital anomalies, 757-759

in difficult situations, 750, 755-761

in upper airway surgery, 761-765

indications and techniques for single lung ventilation in, 165-169

induction of anesthesia in, 391

interventional neuroradiology, 401-402

intraoperative management in, 391-396

laryngoscopy in, 752

maintenance of anesthesia in, 391-393

monitoring in, 393-394

neonatal, 397

neurosurgery in, 389-404

physical examination for, 749-751

positioning for, 394-396

postoperative management in, 396

premature or ex prematurity, reducing risk of anesthesia-related cardiac arrest in, 19-20

premedication for, 751

preoperative evaluation for, 390-391

ProSeal laryngeal mask airway in, 886

spinal, 401

surgical lesions of chest in, 153-160

trauma management, 401

tumor excision, 399

vascular access in, 393

vascular anomaly correction, 400-401

Pedicle screw fixation, of lumbar spine, 410-411

Penile block, in children, 104

Pentastarch, for neurosurgery, 339

Pentobarbital, cerebral physiologic effects of, 282

for sedation of pediatric patients, 190-19

Perfusion pressure, cerebral, control of, in traumatic brain injury, 427-434

critical values for, for oxygen tension maintenance, 427-434

in cerebral blood flow regulation, 257-258

Perioperative arm position, and ulnar neuropathy. *See Ulnar neuropathy.*

Perioperative respiratory complications, 513-537

aspiration, 517-519

Closed Claims Project data on, 493-495

improved incidence of, 519-520

in high-risk patients, 520-521

in postanesthesia care unit, 515-516

hypoxemia, 516-517

of sedation versus anesthesia, 514-515

risk factors for, 521-523

reduction of, 523-529

for deep venous thrombosis and pulmonary embolism, 527-528

local anesthesia and sedation in, 526

preoperative evaluation and preparation in, 523-526

regional anesthesia in, 526-529

Peripheral blockade, complications of, 695-707

drug-induced, 699-702

allergic reactions, 701-702

blockade of other nerves, 702

local toxicity, 701

systemic toxicity, 699-701

needle-induced, 695-699

nerve injuries, 696-699

tissue injuries, 695-696

vascular injuries, 696

Peripheral nerve blocks, for pediatric regional anesthesia, 97-98

abdomen, 103-104

lower extremity blocks, 105-109

nerve stimulator, 98-102

relative contraindications, 98

trunk block, 103

upper extremity blocks, 104-105

Pharyngeal Airway Xpress, 929-930

Pharyngoesophageal perforation, anesthesia and, Closed Claims Project data on, 597-598

Pharynx, anatomy of, 736-740, 813

anesthesia for, in fiberoptic bronchoscopy, 944-945

collapse of, in anesthesia, 801

fat deposition in, 793-794

injury of, in airway management, 958-959

in Esophageal-Tracheal Combitube use, 903–904

limited space in, fiberoptic bronchoscopy in, 941–942

muscle activity of, 791–793

Phenylephrine, for hypertension induction, for interventional neuroradiology, 352

Phenytoin, for seizures, in traumatic brain injury, 453

Phosphodiesterase inhibitors, and rhabdomyolysis, 633

Piercing, body, mask use with, 835

Pierre-Robin syndrome, airway management in, 758–759, 771

glossolabiopexy in, 762–763

Plasma, cerebral effects of, 334

Plasminogen activator, for stroke, 444

for vasospasm, in subarachnoid hemorrhage, 447

Pneumocephalus, neuraxial blockade and, 674

Pneumonia, in subarachnoid hemorrhage, 447

Pneumothorax, central access and, 571–572

peripheral blockade and, 695–696

Polyps, airway, airway management in, 775, 956

Polysomnography, in obstructive sleep apnea, 798–800

Polyvinyl alcohol microspheres, for arteriovenous malformation embolization, 354

Pompe's disease, airway management in, 771

Postoperative blindness, 605–622

anastomoses in, 609

anterior optic nerve in, 608–609

central retinal artery occlusion in, 616

central retinal vein obstruction in, 616–617

Closed Claims Project data on, 499–500

cortical, 615–616

etiology of, 617–618

intracranial optic tract in, 609

ischemic optic neuropathy in, 610–615

anterior, 610–612

arteritic, 614

nonarteritic, 612–614

posterior, 615

management of, 618

ocular circulation in, 610

posterior optic nerve in, 609

prevention of, 618–619

retina in, 606–607

venous drainage in, 610

Postoperative nausea and vomiting, 709–722

anticholinesterase drugs and, 714–715

clinical studies of, 711–712

systematic reviews of, 712–713

definition of, 709

factors affecting, 710

management of, 719

nonpharmacologic, 715

multimodal prophylaxis for, 718–719

nitrous oxide and, 713–714

opioids and, 713

physiology of, 709–710

prophylactic versus rescue antiemetics for, 715–718

propofol and, 714

Post-traumatic stress syndrome, awareness during anesthesia and, 559–561

Potassium channels, anesthetic agent interactions with, 269, 271

Preemptive analgesia, for pain management in children, 129

Pregnancy, myotonic muscular dystrophy in, 651–652

Premedication, for hydrocephalus treatment, 365

for pediatric patients, 751

Preoperative interview, for pediatric surgical patient, 38–39

Preoperative preparation programs for children and parents, 31–34

Problem solving, ethical, regarding pediatric surgical patient, 230–234

Propofol, and postoperative nausea and vomiting, 714

cerebral physiologic effects of, 283

for brain protection, 317–318

for epilepsy surgery, 400

for increased intracranial pressure, in traumatic brain injury, 453

for induction, in pediatric patients, 751

for pediatric neurosurgery, 391

for sedation of pediatric patients, 192

for traumatic brain injury, 421, 433

oxygen tension effects of, 307

ProSeal laryngeal mask airway, 869–870, 871–891, 928

anatomic considerations in, 873–875

complications of, 887–889

conduit function of, 878–879

contraindications for, 879–880

cuff inflation and fixation with, 881–882

description of, 872–873

design and development of, 871–872

emergence with, 885
for anesthesia, 880–885
for difficult intubation, 824–825, 886
for emergency medicine, 885
for intensive care, 885–886
for pediatric patients, 886
for surgery, 886–887
function of, 877–879
gastric tube insertion with, 884–885
indications for, 879–880
insertion of, 880–881
leak testing in, 884
maintenance with, 885
malposition of, 882–884
patency testing for, 884
physiologic considerations with, 875–877
problems with, 887–889
removal of, 885
sealing capability of, 877–878
versus classic mask, 872, 874
with coexisting diseases, 886

Protamine, for heparin reversal, in interventional neuroradiology, 352

Pseudoaneurysms, pulmonary artery catheterization and, 579
radial artery, arterial catheterization and, 584

Psychological preparation of parent and pediatric surgical patient, 29–44
behavioral preparation modalities, parental presence during induction of anesthesia, 34–37
perioperative music and sensory stimuli, 37–38
preoperative interview, 38–40
preoperative preparation programs for children, 31–33
preoperative preparation programs for parents, 33–34
outcomes related to preoperative anxiety, behavioral outcomes, 40–41
physiologic outcomes, 41–42
risk factors for preoperative anxiety, 30–31

Pulmonary artery catheterization. *See Invasive monitoring.*

Pulmonary artery perforation, pulmonary artery catheterization and, 578–580

Pulmonary aspiration, perianesthetic, 517–519

Pulmonary embolism, risk of, reduction of, 527–528

Pulmonary hypertension, in obstructive sleep apnea, 797

Pulmonary sequestrations, in neonates and infants, 155

Pyle's disease, airway management in, 771

Q

Quality improvement programs, for reducing risk of anesthesia-related cardiac arrest in children, 22–23

R

Radial artery pseudoaneurysms, arterial catheterization and, 584

Radiation safety, in interventional neuroradiology, 349

Radiculopathy, keyhole foraminotomy for, 372

Radiology, interventional. *See Interventional neuroradiology.*

Radiosurgery, stereotactic, 372

Rapacuronium, bronchospasm from, in pediatric patients, 53

Recurrent laryngeal nerve injuries, laryngeal mask airway and, 508–509

Reflexes, protective, ProSeal laryngeal mask airway and, 888

Regional anesthesia, complications of, 665–667

for office-based anesthesia in children, 207

perioperative respiratory, 526–529

practical pediatric, 83–113

peripheral nerve blocks, 97–98

abdomen, 103–104

lower extremity blocks, 105–109

nerve stimulator, 98–102

relative contraindications to, 98

trunk block, 103

upper extremity blocks, 104–105

pharmacology and toxicity of local anesthetics, central neuraxial blocks, 85–87

continuous caudal catheter, 90

epidural block, 90–93

local anesthetic agents, 84–85

"single-shot" caudal block, 87-90
spinal anesthesia, 94-97

Regurgitation, in traumatic brain injury, 422-423

Remifentanil, for analgesia in pediatric patients, 76-77

Rendell-Baker-Soucek facemask, 843

Respiratory complications, of myotonic muscular dystrophy, 648-650
of neuraxial blockade, 684-685
perioperative. *See Perioperative respiratory complications.*

Respiratory depression, versus hypercarbia, 627

Respiratory disorders, in pediatric neurosurgery, 396
in rheumatoid arthritis, 406
in spinal cord injury, 457
in traumatic brain injury, 454-455

Respiratory system, ProSeal laryngeal mask effects on, 875-876

Resuscitation, cardiopulmonary, Esophageal-Tracheal Combitube for, 899-900

Reticular activating system, anesthetic agent effects on, 272

Retina, in postoperative blindness, 606-607

Retinal artery occlusion, and postoperative blindness, 616

Retinal vein obstruction, and postoperative blindness, 616-617

Retrograde intubation, 825-827

Retromolar Intubation Fiberscope, 914

Retropharyngeal abscess, airway management in, 780

Rhabdomyolysis, exertional, clinical features of, 642-643
perioperative, 632-633

Rheumatoid arthritis, airway management in, 759, 773-774
spinal surgery for, 405-408
intraoperative management in, 407-408
preoperative evaluation in, 406-407

Rocuronium, for intubation, in traumatic brain injury, 422

Rofecoxib, as selective cyclo-oxygenase-2 inhibitor, 65-66

Ropivacaine, for local anesthesia in children, 85

Ryanodine, in muscle biopsy, for malignant hyperthermia, 637

S

SAFE (superselective anesthesia functional examination), for interventional neuroradiology, 351

Sagittal sinuses, anatomy of, 249

Saline solutions, cerebral effects of, 332-333, 336-337

Salt-wasting, cerebral, fluid management in, 342

Sarcoma, Kaposi's, airway management in, 780

Scents, for facemasks, 844

Schroeder Oral/Nasal Directional Stylet, 915

Sciatic nerve block, in children, 105-106

Scleroderma, airway management in, 771

Sclerotherapy, for venous angioma, 356

Sedation, after spinal surgery, 410
and analgesia in pediatric patients for procedures outside the operating room, 181-194
definition of sedation, 183-184
rewriting hospital policies to assure compliance with new definition and standards, 184-185
risks of sedation, 182-183
specific sedation techniques, 185-192
for arteriovenous malformation embolization, 385-386
for awake intubation, 824
for fiberoptic bronchoscopy, 944
for interventional neuroradiology, 350
for pediatric patients, 391
for stereotactic procedures, 371-372
mechanism of action of, 271-272
perioperative respiratory complications of, 514, 526
reducing risk of anesthesia-related cardiac arrest in children from, 20-21

Sedatives, with epidural analgesia, in children, 124

Seeing Optical Stylet System, 912-913

Seizure foci, detection of, in pediatric neuroanesthesia, 141-143

Seizures, in increased intracranial pressure, 453
in stroke, 444
in subarachnoid hemorrhage, 445

Sensory stimuli, perioperative, for reducing preoperative anxiety in children, 37-38

Sepsis, in subarachnoid hemorrhage, 447

Serotonin syndrome, versus hyperthermia, 631

Sevoflurane, cerebral physiologic effects of, 277-278, 280
for pediatric neurosurgery, 391

Shaken baby syndrome, hematoma evacuation in, 401

Shock, hemorrhagic, hypertonic solutions for, 336-337

Shuttle, The (lighted stylet), 911

Sialadenopathy, laryngeal mask airway and, 508

Sigmoid sinus, anatomy of, 250

Siker laryngoscope blade, 922

Silver-Russel dwarfism, airway management in, 771

Simultaneous compression-ventilation cardiopulmonary resuscitation, in treatment of anesthesia-related cardiac arrest in children, 10

Single lung ventilation, indications and techniques for, in infants and children, 165-169

Single-lumen endotracheal tube, in single lung ventilation in infants and children, 165-166

"Single-shot" caudal block, for pediatric regional anesthesia, 87-90

Sinusitis, in nasotracheal intubation, 957-958

SjvO₂ (jugular venous bulb oxygen saturation), 294-297
in traumatic brain injury, 454

Sleep, physiology of, 793

Sleep apnea, and perioperative respiratory complications, 522
obstructive. *See Obstructive sleep apnea.*

Smith-Lemli-Optiz syndrome, airway management in, 771

Sniffing position, ability to assume, assessment of, 817

Snoring, in obstructive sleep apnea, 793, 795
mask use difficulty related to, 835

Sodium bicarbonate, in treatment of anesthesia-related cardiac arrest in children, 14-15

Sodium channels, anesthetic agent interactions with, 269-271

Somatosensory evoked potentials, anesthetic selection for, 287
for monitoring spinal cord in pediatric neuroanesthesia, 144-145

Sotos syndrome, airway management in, 771

Spectroscopy, near-infrared, for transcranial cerebral oximetry, 297-304

Spina bifida, treatment of, 397

Spinal anesthesia, for pediatric regional anesthesia, 94-97

Spinal artery syndrome, neuraxial blockade and, 675

Spinal cord, decompression, in metastasis, 407-410
injury, 455-457
anesthesia and, Closed Claims Project data on, 487
complications of, 457
epidemiology of, 455
evaluation of, 456
fluid management in, 340-341
initial stabilization in, 456
neuraxial blockade and, 675
secondary injury in, 456-457
lesions, interventional neuroradiology for, 355
monitoring, in pediatric neuroanesthesia, 144-146
syringomyelia of, endoscopic treatment of, 367

Spinal surgery, 405-415
for metastatic tumors, 408-410
for pediatric patients, 397, 401
for rheumatoid arthritis, 405-408
lumbar interbody fusion, 410-412
visual loss after, 412-414

Spinal-epidural anesthesia, effects of, 676-677

Spine. *See also Spinal cord.*
injuries of, with traumatic brain injury, 418, 420-421, 423
metastatic tumors of, surgical treatment of, 407-410

Spirometry, of perioperative respiratory complications, 524-525

Split Berman airway, 855

Spondylolisthesis, lumbar, fusion for, 410-412

Starling equation, fluid movement and, 330–331

Stenting, for atherosclerosis, 356–357

Stereotactic procedures, anesthetic considerations in, 371

for brain biopsy, 366

frameless, 370–371

head frames in, 369–370

radiosurgery, 372

Sternum, restricted space in, rigid laryngoscope for, 922

Stethoscope, for airway sound monitoring, 840

Stevens-Johnson syndrome, airway management in, 771

Stiff joint syndrome, in diabetes mellitus, airway management in, 772–773

Stomach, insufflation of, with ProSeal laryngeal mask airway, 887–888

Straight sinus, anatomy of, 249

Straps, for facemask, 848

Stridor, airway management in, 767, 772

postextubation, in pediatric patients, 759–760

Strip craniectomy, endoscopic, 367–369

Stroke, 441–444

complications of, 441–443

evaluation of, 441–443

fluid management in, 340

thrombolytic therapy for, 357, 443–444

treatment of, 441, 444

Stylets, for endotracheal intubation, in pediatric patients, 756–757

lighted, 909–914

Subarachnoid hemorrhage, 444–448

anesthetic management of, 381–384

classification of, 377

clinical features of, 378, 445

complications of, 379–381, 447–448

diagnosis of, 378

epidemiology of, 377–378

fluid management in, 340

in aneurysm, 444–448

in stroke, 441

intraoperative, 383–384

postoperative management of, 384

prognosis for, 444–445

recurrent, 379, 445

treatment of, 354–355

vasospasm in, 445–447

warning leak in, 378

Subdural injections, effects of, 680–681

Subglottic edema, endotracheal intubation and, 507

Submandibular tissue, compliance of, in fiberoptic bronchoscopy, 942

Succinylcholine, and rhabdomyolysis, 632

cerebral physiologic effects of, 284, 286

depolarizing effects of, in pediatric anesthesia, 51–53

for intubation, in traumatic brain injury, 422

Sufentanil, cerebral physiologic effects of, 281

Superior vena cava syndrome, airway management in, 777–778

Superselective anesthesia functional examination, for interventional neuroradiology, 351

Supraventricular tachycardia, management of, in anesthesia-related cardiac arrest in children, 18

Sympathectomy, thoracoscopic, 371–372

Sympathetic nervous system, in cerebral blood flow regulation, 254

Syndrome of inappropriate antidiuretic hormone secretion, 342

fluid management in, 342

in subarachnoid hemorrhage, 381, 448

in traumatic brain injury, 455

Syringomyelia, endoscopic treatment of, 367

T

Teeth, injury of, in airway management, 958

in facemask use, 842

in oral airway use, 859

lack of, mask use with, 835

loose, in pediatric patients, 750

Temperature, body. *See also Hypothermia.*

cerebral blood flow effects of, 254

control of, for brain protection, 320–321

Temporomandibular joint, disorders, in airway management, 958

in rheumatoid arthritis, 773–774

injuries, endotracheal intubation and, 505

Tensor palatini muscles, activity of, 791–793

Tethered cord syndrome, treatment of, 401

Tetracaine, for local anesthesia in children, 85

Thalassemia, airway management in, 771

Thermoregulatory dysfunction, neuraxial blockade and, 681

Thiopental, cerebral physiologic effects of, 282
for aneurysm repair, 382, 384
for brain protection, 316–317
for induction, in pediatric patients, 751
for pediatric neurosurgery, 391
for traumatic brain injury, 421, 433
oxygen tension effects of, 307

Thoracic anesthesia, pediatric, 153–180
indications and techniques for single-lung ventilation in infants and children, balloon-tipped bronchial blockers, 166–167
double-lumen tubes, 168–169
single-lumen endotracheal tube, 165–166
Univent tube, 167–168
monitoring and anesthetic techniques, 169–170
epidural anesthesia, 171–174
surgical lesions of chest, in childhood, 161–164
in neonates and infants, congenital cystic lesions, 155–156
congenital diaphragmatic hernia, 157–158
congenital lobar emphysema, 156
pulmonary sequestrations, 155
tracheal stenosis, 153, 155
tracheoesophageal fistula, 158–160
ventilation and perfusion during thoracic surgery, 164–165

Thoracoabdominal synchrony, in effective mask use, 839

Thoracoscopic sympathectomy, 371–372

Thoracoscopy, video-assisted, to reduce perioperative respiratory complications, 526

Thoracotomy, for spinal metastatic tumor excision, 409–410

Thromboembolic disease, in spinal cord injury, 457
in subarachnoid hemorrhage, 448

Thrombolytic therapy, for stroke, 357, 443–444

Thrombosis, central access and, 577–578

Thyroid gland, enlarged, airway management in, 776

Tirilizad, for spinal cord injury, 457
for vasospasm, in subarachnoid hemorrhage, 447

Tissue injuries, peripheral blockade and, 695–696

Tissue plasminogen activator, for stroke, 444
for vasospasm, in subarachnoid hemorrhage, 447

Tongue, anatomy of, pediatric, 748
anesthesia for, in fiberoptic bronchoscopy, 944–945
enlarged, in acromegaly, 774
injury of, endotracheal intubation and, 505
in airway management, 958–959
in facemask use, 842
laryngeal mask airway and, 508
with ProSeal laryngeal mask airway, 887
piercing of, mask use with, 835
size of, in Mallampati classification, 817–819
stitches in, for airway management, 762
suturing to lip, in Pierre-Robin syndrome, 762–763

Tonsillitis, airway management in, 779

Topical anesthesia, for awake intubation, 824–825
for fiberoptic bronchoscopy, 944–948

Total spinal anesthesia, effects of, 679–680

Trachea, anesthesia for, in fiberoptic bronchoscopy, 945–948
injury of, endotracheal intubation and, 507
in airway management, 959–969
stenosis of, in airway management, 963–966

Tracheal ring, first, anatomy of, 742

Tracheal stenosis, in neonates and infants, 153, 155

Tracheoesophageal fistula, airway management in, 771
in neonates and infants, 158–160

Tracheostomy, percutaneous, complications of, 966–968

Trachlight, 910–912

Transcranial cerebral oximetry, 297–304
clinical use of, 300–304
concentration type, 299–301

devices for, 299–304
history of, 297–298
limitations of, 304
methodology of, 298–300
saturation type, 299–304

Transcranial Doppler, for monitoring cerebral oxygenation in pediatric neuroanesthesia, 140–141

Transmural pressure, control of, in aneurysm repair, 382

Trauma. *See also specific structures, injury of.*
Esophageal-Tracheal Combitube use in, 900–901
to lumbar spine, fusion for, 410–412

Traumatic brain injury, 417–439
cerebral blood flow dysregulation in, 259–260
cerebral metabolic rate of oxygen consumption in, 295
cerebral oxygen saturation measurement in, 296
cerebral oxygen tension monitoring in, 306
complications of, 454–455
definitive management of, 427–434
epidemiology of, 417, 448
evaluation and stabilization of, 418–426, 449
hemodynamic, 423–426
of airway, 418–423
rapid, 418
fluid management in, 339
in pediatric patients, 401
increased intracranial pressure in, 450–453
injuries associated with, 418
monitoring of, 454
prognosis for, 417
secondary injury in, 433–434, 448–449
succinylcholine in, 286
team approach to, 417–418
treatment of, 449–454

Treacher-Collins syndrome, airway management in, 758–759, 771

Trigeminal nerve block, in fiberoptic bronchoscopy, 944

Triple H therapy, for vasospasm, in subarachnoid hemorrhage, 380

Trismus-pseudocampodactyl syndrome, airway management in, 771

Trisomy 21, airway management in, 757–758, 769

Trunk block, in children, 103

Tube-Stat lighted stylet, 911

Tumors, brain, pediatric, 399
spinal, surgical treatment of, 407–410

Turner's syndrome, airway management in, 771

U

Ulnar neuropathy, perioperative arm position and, 589–603
anatomy and epidemiology of, 593–595
anesthetic implications of, 595–598
clinical studies of, 595–598
Closed Claims Project database on, 589–590
management of, 600–601
mechanism of, 590–593
medicolegal implications of, 598–600
prevention of, 600
postoperative, Closed Claims Project data on, 496–497

Univent tube, in single lung ventilation in infants and children, 167–168

Upper extremity blocks, in children, 104–105

UpsherScope laryngoscope, 926

Urbach-Wiethe disease, airway management in, 771

Uvula injuries, endotracheal intubation and, 504–505
in oral airway use, 860

V

Vagus nerve block, in fiberoptic bronchoscopy, 945–946

Vascular access, for interventional neuroradiology, 348–349
for pediatric neurosurgery, 393
in treatment of anesthesia-related cardiac arrest in children, 11–12

Vascular injuries, peripheral blockade and, 696

Vascular insufficiency, arterial catheterization and, 582–584

Vascular resistance, cerebral, regulation of, 427

Vascular surgery, intracranial. *See Aneurysms, intracranial; Arteriovenous malformations, brain.*

Vasopressin, in treatment of anesthesia-related cardiac arrest in children, 14

Vasospasm, in subarachnoid hemorrhage, 356, 380, 384, 445–447

Vecuronium, for intubation, in traumatic brain injury, 422

Vein of Galen, anatomy of, 248–249
malformations of, interventional neuro-radiology for, 354–355

Venous angioma, sclerotherapy for, 356

Venous injuries, central access and, 572–573

Ventricular fibrillation, management of, in anesthesia-related cardiac arrest in children, 15, 17

Ventricular tachycardia, management of, in anesthesia-related cardiac arrest in children, 15, 17

Ventriculostomy, endoscopic, for hydrocephalus, 363–366

Vertebrae. *See Spine; Spinal cord.*

Vertebral artery, anatomy of, 247–248
fistulae of, interventional neuroradiology for, 354

Video technology, in laryngoscopy, 923

Video-assisted thoracoscopy, to reduce perioperative respiratory complications, 526

Visual loss, after spinal surgery, 412–414

Vocal cords, anatomy of, 743
pediatric, 748

paralysis of, endotracheal intubation and, 506
in airway management, 960–961
polyps of, airway management in, 775

Vomiting, with facemask, 849–850
with ProSeal laryngeal mask airway, 888

W

Wake-up test, for monitoring during pediatric neuroanesthesia, 145–146

Wegener's granulomatosis, airway management in, 771

Williams airway, 856

Wire embolism, central access and, 576

WuScope laryngoscope system, 926–928

Z

Zenker's diverticulum, airway management in, 774

Zygoma, injury of, in facemask use, 842